

#5

## RAW SEQUENCE LISTING

The Biotechnology Systems Branch of the Scientific and Technical  
Information Center (STIC) no errors detected.

Application Serial Number: 101 S 32,395  
Source: PCT  
Date Processed by STIC: 4-29-05

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PCT

**RAW SEQUENCE LISTING**  
**PATENT APPLICATION: US/10/532,395**

**DATE: 04/29/2005**  
**TIME: 17:00:36**

**Input Set : A:\PTO.FG.txt**  
**Output Set: N:\CRF4\04292005\J532395.raw**

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3 <110> APPLICANT: University of Pennsylvania
4     Avarbock, David
5     Rubin, Harvey
6     Avarbock, Andrew
8 <120> TITLE OF INVENTION: Fragments and Activity of Rel protein in M. Tuberculosis and
other uses
9     thereof
W--> 10 <130> FILE REFERENCE: UPFT0002-100
C--> 12 <140> CURRENT APPLICATION NUMBER: US/10/532,395
C--> 12 <141> CURRENT FILING DATE: 2005-04-22
12 <150> PRIOR APPLICATION NUMBER: PCT/US03/33692
13 <151> PRIOR FILING DATE: 2003-10-22
15 <150> PRIOR APPLICATION NUMBER: US 60/420,129
16 <151> PRIOR FILING DATE: 2002-10-22
18 <160> NUMBER OF SEQ ID NOS: 20
20 <170> SOFTWARE: PatentIn version 3.2
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24 <212> TYPE: DNA
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59 <211> LENGTH: 36
60 <212> TYPE: DNA
61 <213> ORGANISM: Mycobacterium tuberculosis

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77 <211> LENGTH: 738  
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79 <213> ORGANISM: Mycobacterium tuberculosis  
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87 Ala Val His Arg Glu Ile Tyr Pro Lys Ala Asp Leu Ser Ile Leu Gln  
88 20 25 30  
91 Arg Ala Tyr Glu Val Ala Asp Gln Arg His Ala Ser Gln Leu Arg Gln  
92 35 40 45  
95 Ser Gly Asp Pro Tyr Ile Thr His Pro Leu Ala Val Ala Asn Ile Leu  
96 50 55 60  
99 Ala Glu Leu Gly Met Asp Thr Thr Leu Val Ala Ala Leu Leu His  
100 65 70 75 80  
103 Asp Thr Val Glu Asp Thr Gly Tyr Thr Leu Glu Ala Leu Thr Glu Glu  
104 85 90 95  
107 Phe Gly Glu Glu Val Gly His Leu Val Asp Gly Val Thr Lys Leu Asp  
108 100 105 110  
111 Arg Val Val Leu Gly Ser Ala Ala Glu Gly Glu Thr Ile Arg Lys Met  
112 115 120 125  
115 Ile Thr Ala Met Ala Arg Asp Pro Arg Val Leu Val Ile Lys Val Ala  
116 130 135 140  
119 Asp Arg Leu His Asn Met Arg Thr Met Arg Phe Leu Pro Pro Glu Lys  
120 145 150 155 160  
123 Gln Ala Arg Lys Ala Arg Glu Thr Leu Glu Val Ile Ala Pro Leu Ala  
124 165 170 175  
127 His Arg Leu Gly Met Ala Ser Val Lys Trp Glu Leu Glu Asp Leu Ser  
128 180 185 190  
131 Phe Ala Ile Leu His Pro Lys Lys Tyr Glu Glu Ile Val Arg Leu Val  
132 195 200 205  
135 Ala Gly Arg Ala Pro Ser Arg Asp Thr Tyr Leu Ala Lys Val Arg Ala  
136 210 215 220  
139 Glu Ile Val Asn Thr Leu Thr Ala Ser Lys Ile Lys Ala Thr Val Glu  
140 225 230 235 240  
143 Gly Arg Pro Lys His Tyr Trp Ser Ile Tyr Gln Lys Met Ile Val Lys  
144 245 250 255  
147 Gly Arg Asp Phe Asp Asp Ile His Asp Leu Val Gly Val Arg Ile Leu  
148 260 265 270  
151 Cys Asp Glu Ile Arg Asp Cys Tyr Ala Ala Val Gly Val Val His Ser  
152 275 280 285

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155 Leu Trp Gln Pro Met Ala Gly Arg Phe Lys Asp Tyr Ile Ala Gln Pro  
 156 290 295 300  
 159 Arg Tyr Gly Val Tyr Gln Ser Leu His Thr Thr Val Val Gly Pro Glu  
 160 305 310 315 320  
 163 Gly Lys Pro Leu Glu Val Gln Ile Arg Thr Arg Asp Met His Arg Thr  
 164 325 330 335  
 167 Ala Glu Tyr Gly Ile Ala Ala His Trp Arg Tyr Lys Glu Ala Lys Gly  
 168 340 345 350  
 171 Arg Asn Gly Val Leu His Pro His Ala Ala Glu Ile Asp Asp Met  
 172 355 360 365  
 175 Ala Trp Met Arg Gln Leu Leu Asp Trp Gln Arg Glu Ala Ala Asp Pro  
 176 370 375 380  
 179 Gly Glu Phe Leu Glu Ser Leu Arg Tyr Asp Leu Ala Val Gln Glu Ile  
 180 385 390 395 400  
 183 Phe Val Phe Thr Pro Lys Gly Asp Val Ile Thr Leu Pro Thr Gly Ser  
 184 405 410 415  
 187 Thr Pro Val Asp Phe Ala Tyr Ala Val His Thr Glu Val Gly His Arg  
 188 420 425 430  
 191 Cys Ile Gly Ala Arg Val Asn Gly Arg Leu Val Ala Leu Glu Arg Lys  
 192 435 440 445  
 195 Leu Glu Asn Gly Glu Val Val Glu Val Phe Thr Ser Lys Ala Pro Asn  
 196 450 455 460  
 199 Ala Gly Pro Ser Arg Asp Trp Gln Gln Phe Val Val Ser Pro Arg Ala  
 200 465 470 475 480  
 203 Lys Thr Lys Ile Arg Gln Trp Phe Ala Lys Glu Arg Arg Glu Glu Ala  
 204 485 490 495  
 207 Leu Glu Thr Gly Lys Asp Ala Met Ala Arg Glu Val Arg Arg Gly Gly  
 208 500 505 510  
 211 Leu Pro Leu Gln Arg Leu Val Asn Gly Glu Ser Met Ala Ala Val Ala  
 212 515 520 525  
 215 Arg Glu Leu His Tyr Ala Asp Val Ser Ala Leu Tyr Thr Ala Ile Gly  
 216 530 535 540  
 219 Glu Gly His Val Ser Ala Lys His Val Val Gln Arg Leu Leu Ala Glu  
 220 545 550 555 560  
 223 Leu Gly Gly Ile Asp Gln Ala Glu Glu Leu Ala Glu Arg Ser Thr  
 224 565 570 575  
 227 Pro Ala Thr Met Pro Arg Arg Pro Arg Ser Thr Asp Asp Val Gly Val  
 228 580 585 590  
 231 Ser Val Pro Gly Ala Pro Gly Val Leu Thr Lys Leu Ala Lys Cys Cys  
 232 595 600 605  
 235 Thr Pro Val Pro Gly Asp Val Ile Met Gly Phe Val Thr Arg Gly Gly  
 236 610 615 620  
 239 Gly Val Ser Val His Arg Thr Asp Cys Thr Asn Ala Ala Ser Leu Gln  
 240 625 630 635 640  
 243 Gln Gln Ala Glu Arg Ile Ile Glu Val Leu Trp Ala Pro Ser Pro Ser  
 244 645 650 655  
 247 Ser Val Phe Leu Val Ala Ile Gln Val Glu Ala Leu Asp Arg His Arg  
 248 660 665 670  
 251 Leu Leu Ser Asp Val Thr Arg Ala Leu Ala Asp Glu Lys Val Asn Ile

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255	Leu Ser Ala Ser Val Thr Thr Ser Gly Asp Arg Val Ala Ile Ser Arg		
256	690	695	700
259	Phe Thr Phe Glu Met Gly Asp Pro Lys His Leu Gly His Leu Leu Asn		
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263	720	725	730
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272	<211> LENGTH: 450		
273	<212> TYPE: PRT		
274	<213> ORGANISM: Mycobacterium tuberculosis		
276	<400> SEQUENCE: 8		
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279	1	5	10
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282	Ala Val His Arg Glu Ile Tyr Pro Lys Ala Asp Leu Ser Ile Leu Gln		
283	20	25	30
286	Arg Ala Tyr Glu Val Ala Asp Gln Arg His Ala Ser Gln Leu Arg Gln		
287	35	40	45
290	Ser Gly Asp Pro Tyr Ile Thr His Pro Leu Ala Val Ala Asn Ile Leu		
291	50	55	60
294	Ala Glu Leu Gly Met Asp Thr Thr Leu Val Ala Ala Leu Leu His		
295	65	70	75
			80
298	Asp Thr Val Glu Asp Thr Gly Tyr Thr Leu Glu Ala Leu Thr Glu Glu		
299	85	90	95
302	Phe Gly Glu Glu Val Gly His Leu Val Asp Gly Val Thr Lys Leu Asp		
303	100	105	110
306	Arg Val Val Leu Gly Ser Ala Ala Glu Gly Glu Thr Ile Arg Lys Met		
307	115	120	125
310	Ile Thr Ala Met Ala Arg Asp Pro Arg Val Leu Val Ile Lys Val Ala		
311	130	135	140
314	Asp Arg Leu His Asn Met Arg Thr Met Arg Phe Leu Pro Pro Glu Lys		
315	145	150	155
			160
318	Gln Ala Arg Lys Ala Arg Glu Thr Leu Glu Val Ile Ala Pro Leu Ala		
319	165	170	175
322	His Arg Leu Gly Met Ala Ser Val Lys Trp Glu Leu Glu Asp Leu Ser		
323	180	185	190
326	Phe Ala Ile Leu His Pro Lys Lys Tyr Glu Glu Ile Val Arg Leu Val		
327	195	200	205
330	Ala Gly Arg Ala Pro Ser Arg Asp Thr Tyr Leu Ala Lys Val Arg Ala		
331	210	215	220
334	Glu Ile Val Asn Thr Leu Thr Ala Ser Lys Ile Lys Ala Thr Val Glu		
335	225	230	235
			240
338	Gly Arg Pro Lys His Tyr Trp Ser Ile Tyr Gln Lys Met Ile Val Lys		
339	245	250	255
342	Gly Arg Asp Phe Asp Asp Ile His Asp Leu Val Gly Val Arg Ile Leu		
343	260	265	270
346	Cys Asp Glu Ile Arg Asp Cys Tyr Ala Ala Val Gly Val Val His Ser		
347	275	280	285

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350 Leu Trp Gln Pro Met Ala Gly Arg Phe Lys Asp Tyr Ile Ala Gln Pro  
 351 290 295 300  
 354 Arg Tyr Gly Val Tyr Gln Ser Leu His Thr Thr Val Val Gly Pro Glu  
 355 305 310 315 320  
 358 Gly Lys Pro Leu Glu Val Gln Ile Arg Thr Arg Asp Met His Arg Thr  
 359 325 330 335  
 362 Ala Glu Tyr Gly Ile Ala Ala His Trp Arg Tyr Lys Glu Ala Lys Gly  
 363 340 345 350  
 366 Arg Asn Gly Val Leu His Pro His Ala Ala Ala Glu Ile Asp Asp Met  
 367 355 360 365  
 370 Ala Trp Met Arg Gln Leu Leu Asp Trp Gln Arg Glu Ala Ala Asp Pro  
 371 370 375 380  
 374 Gly Glu Phe Leu Glu Ser Leu Arg Tyr Asp Leu Ala Val Gln Glu Ile  
 375 385 390 395 400  
 378 Phe Val Phe Thr Pro Lys Gly Asp Val Ile Thr Leu Pro Thr Gly Ser  
 379 405 410 415  
 382 Thr Pro Val Asp Phe Ala Tyr Ala Val His Thr Glu Val Gly His Arg  
 383 420 425 430  
 386 Cys Ile Gly Ala Arg Val Asn Gly Arg Leu Val Ala Leu Glu Arg Lys  
 387 435 440 445  
 390 Leu Glu  
 391 450  
 394 <210> SEQ ID NO: 9  
 395 <211> LENGTH: 394  
 396 <212> TYPE: PRT  
 397 <213> ORGANISM: Mycobacterium tuberculosis  
 399 <400> SEQUENCE: 9  
 401 Met Thr Ala Gln Arg Ser Thr Thr Asn Pro Val Leu Glu Pro Leu Val  
 402 1 5 10 15  
 405 Ala Val His Arg Glu Ile Tyr Pro Lys Ala Asp Leu Ser Ile Leu Gln  
 406 20 25 30  
 409 Arg Ala Tyr Glu Val Ala Asp Gln Arg His Ala Ser Gln Leu Arg Gln  
 410 35 40 45  
 413 Ser Gly Asp Pro Tyr Ile Thr His Pro Leu Ala Val Ala Asn Ile Leu  
 414 50 55 60  
 417 Ala Glu Leu Gly Met Asp Thr Thr Leu Val Ala Ala Leu Leu His  
 418 65 70 75 80  
 421 Asp Thr Val Glu Asp Thr Gly Tyr Thr Leu Glu Ala Leu Thr Glu Glu  
 422 85 90 95  
 425 Phe Gly Glu Glu Val Gly His Leu Val Asp Gly Val Thr Lys Leu Asp  
 426 100 105 110  
 429 Arg Val Val Leu Gly Ser Ala Ala Glu Gly Glu Thr Ile Arg Lys Met  
 430 115 120 125  
 433 Ile Thr Ala Met Ala Arg Asp Pro Arg Val Leu Val Ile Lys Val Ala  
 434 130 135 140  
 437 Asp Arg Leu His Asn Met Arg Thr Met Arg Phe Leu Pro Pro Glu Lys  
 438 145 150 155 160  
 441 Gln Ala Arg Lys Ala Arg Glu Thr Leu Glu Val Ile Ala Pro Leu Ala  
 442 165 170 175

**VERIFICATION SUMMARY**

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Output Set: N:\CRF4\04292005\J532395.raw

L:10 M:283 W: Missing Blank Line separator, <130> field identifier

L:12 M:270 C: Current Application Number differs, Replaced Current Application No

L:12 M:271 C: Current Filing Date differs, Replaced Current Filing Date